What is claimed is:

3   1.   A method of scheduling data packet transmission in a data communication

4   network, comprising:

5   assigning received data packets to an appropriate one of a plurality of scheduling

6   heap data structures;

7   percolating each scheduling heap data structure to identify a most eligible data

8   packet in each heap data structure;

9   prioritizing among the most-eligible data packets; and

10   transmitting a highest-priority one of the most-eligible data packets.

1   2.   The method according to claim 1, wherein said percolating arranges the data

2   packets in each heap data structure according to assigned priority levels.

1   3.   The method according to claim 2, wherein selected data packets are arranged

2   based on anticipated arrival times for the data packets.

1   4.   The method according to claim 3, wherein the selected data packets are arranged

2   using weighted fair queuing.

1   5.   The method according to claim 3, wherein the selected data packets have a

2   priority value equal to that of a priority value of another data packet.

1   6.   The method according to claim 3, wherein the selected data packets lack a priority

2   value.

1   7.   The method according to claim 1, wherein said percolating arranges the data

2   packets in each heap data structure in order of anticipated arrival times for the data

3   packets.

1   8.   The method according to claim 1, wherein said percolating arranges the data

2   packets in each heap data structure using weighted fair queuing.

1   9.   The method according to claim 2, wherein the weighted fair queuing is based on

2   anticipated arrival times for the data packets.

1   10.   A system for scheduling data packet transmission comprising

2   a plurality of scheduling heap data structures having a plurality of levels for

3   storing scheduling values for data packets according to their relative priorities; and

4   a scheduler for each heap data structure, each scheduler for identifying a most-

5   eligible one of the scheduling values in the corresponding heap data structure; and

6   a master scheduler coupled to each of the schedulers for selecting a highest

7   priority one of the most-eligible scheduling values.

1   11.   The system according to claim 10, further comprising a queue controller for each

2   heap data structure for manipulating scheduling values in the corresponding heap data

3   structure.

1   12.   The system according to claim 11, wherein the queue controller coupled to each

2   heap data structure arranges the data packets in the corresponding heap data structure

3   according to assigned priority levels.

1   13.   The system according to claim 12, wherein the queue controller arranges selected

2   data packets in the corresponding heap data structure based on anticipated arrival times

3   for the data packets.

1   14.   The system according to claim 13, wherein the selected data packets are arranged

2   using weighted fair queuing.

1   15.   The system according to claim 13, wherein the selected data packets have a

2   priority value equal to that of a priority value of another data packet.

1   16.   The system according to claim 13, wherein the selected data packets lack a

2   priority value.

1   17.   The system according to claim 11, wherein the queue controller coupled to each

2   heap data structure arranges the data packets in each heap data structure in order of

3   anticipated arrival times for the data packets.

1   18.   The system according to claim 11, wherein the queue controller coupled to each

2   heap data structure arranges the data packets in each heap data structure using weighted

3   fair queuing.

1   19.   The system according to claim 18, wherein the weighted fair queuing is based on

2   anticipated arrival times for the data packets.

1   20.   A method of scheduling data packet transmission in a data communication

2   network, comprising:

3   assigning received data packets to each of a plurality of priority levels;

4   prioritizing the data packets within each level according to a first prioritization

5   scheme;

6   prioritizing among the levels according to a second prioritization scheme; and

7   transmitting a highest priority one of the data packets.

1   21.   The method according to claim 20, wherein the first prioritization scheme

2   comprises weighted fair queuing.

1   22.   The method according to claim 21, wherein the weighted fair queuing is based on

2   anticipated arrival times for the data packets.

1   23.   The method according to claim 20, wherein the second prioritization scheme

2   comprises strict prioritization.